

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

MARPOSS SOCIETA' PER AZIONI
Patent Department
via Saliceto 13
I-40010 BENTIVOGLIO BO
ITALIE

RICEVUTO

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PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(PCT Rule 71.1)

Date of mailing
(day/month/year)

26.10.2005

Applicant's or agent's file reference
BRE/360

IMPORTANT NOTIFICATION

| | | |
|--|--|--|
| International application No. PCT/EP2004/051506 | International filing date (day/month/year) 15.07.2004 | Priority date (day/month/year) 16.07.2003 |
|--|--|--|

Applicant
MARPOSS SOCIETA' PER AZIONI et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary report on patentability and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/I/B/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary report on patentability. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the international preliminary examining authority:



European Patent Office
D-80298 Munich
Tel. +49 89 2399 - 0 Tx: 523656 epmu d
Fax: +49 89 2399 - 4465

Authorized Officer

Louca-Dreher, C
Tel. +49 89 2399-7264



PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

| | | |
|---|--|---|
| Applicant's or agent's file reference BRE/360 | FOR FURTHER ACTION | |
| See Form PCT/IPEA/416 | | |
| International application No. PCT/EP2004/051506 | International filing date (day/month/year) 15.07.2004 | Priority date (day/month/year) 16.07.2003 |
| International Patent Classification (IPC) or national classification and IPC G05B19/401, G08C17/02 | | |
| Applicant MARPOSS SOCIETA' PER AZIONI et al. | | |
| <p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> (<i>sent to the applicant and to the International Bureau</i>) a total of 9 sheets, as follows:</p> <ul style="list-style-type: none"> <input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions). <input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box. <p>b. <input type="checkbox"/> (<i>sent to the International Bureau only</i>) a total of (indicate type and number of electronic carrier(s)), containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p> | | |
| <p>4. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Box No. I Basis of the opinion <input type="checkbox"/> Box No. II Priority <input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability <input type="checkbox"/> Box No. IV Lack of unity of invention <input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement <input type="checkbox"/> Box No. VI Certain documents cited <input type="checkbox"/> Box No. VII Certain defects in the international application <input checked="" type="checkbox"/> Box No. VIII Certain observations on the international application | | |
| Date of submission of the demand 11.05.2005 | Date of completion of this report 26.10.2005 | |
| Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465 | Authorized Officer Hasubek, B Telephone No. +49 89 2399-6939 | |
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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/EP2004/051506

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
 - This report is based on translations from the original language into the following language, which is the language of a translation furnished for the purposes of:
 - international search (under Rules 12.3 and 23.1(b))
 - publication of the international application (under Rule 12.4)
 - international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

Description, Pages

| | |
|--------------|--|
| 2, 3, 5-19 | as originally filed |
| 1, 1a, 4, 4a | received on 11.05.2005 with letter of 10.05.2005 |

Claims, Numbers

| | |
|------|--|
| 1-19 | received on 11.05.2005 with letter of 10.05.2005 |
|------|--|

Drawings, Sheets

| | |
|----------|---------------------|
| 1/2, 2/2 | as originally filed |
|----------|---------------------|

- a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. The amendments have resulted in the cancellation of:
 - the description, pages
 - the claims, Nos.
 - the drawings, sheets/figs
 - the sequence listing (*specify*):
 - any table(s) related to sequence listing (*specify*):
4. This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
 - the description, pages
 - the claims, Nos.
 - the drawings, sheets/figs
 - the sequence listing (*specify*):
 - any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/EP2004/051506

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | |
|-------------------------------|-------------|-----------|
| Novelty (N) | Yes: Claims | 5-10 |
| | No: Claims | 1-4,11-19 |
| Inventive step (IS) | Yes: Claims | |
| | No: Claims | 1-19 |
| Industrial applicability (IA) | Yes: Claims | 1-19 |
| | No: Claims | |

2. Citations and explanations (Rule 70.7):

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

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I Re Item V

Reference is made to the following documents:

D1: EP-A-0 872 787 (RENISHAW PLC) 21 October 1998 (1998-10-21)

D2: US-A-5 297 203 (HEUNG CHARLEY ET AL) 22 March 1994 (1994-03-22)

1. The subject-matter of independent **claims 1 and 15** does not meet the requirements of Article 33(2) PCT, because it lacks novelty over D1.

D1 discloses all the features of **claim 1** in combination showing a system for checking the position and/or dimensions of mechanical pieces (Abstract) comprising

- a checking probe with detecting devices, power supply devices, a logic unit, memory devices and a remote transceiver (col. 3, lines 42-55) whereby
- a base transceiver unit (col. 3, lines 30-33 and lines 56-57)
- a display device for the parameters values received from the remote transceiver unit (col. 3, lines 30-41 and col. 5, lines 2-6),
- a manually-operated control device connected to the base transceiver unit adapted to generate, upon an operator's manual control, control signals and for transmitting said control signals by means of the base transceiver unit (col. 3, lines 30-41),
- said logic unit is adapted
 - to select at least the value of said at least one operation parameter in response to controls received by means of the remote transceiver unit (col. 2, lines 41-44 and col. 5, lines 10-33),
 - to provide signals indicative of said at least one parameter and the associated value (col. 4, lines 50-55)
 - to provide, in response to the current received controls, signals indicative of a current selectable value out of two or more selectable values (col. 5, lines 10-33),
 - said display device displaying said current selectable value of said at least one parameter (col. 5, lines 20-33),
 - said control signals generated and transmitted by the manually operated control device being adapted to control the logic unit of the checking probe

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to update the value of said at least one operation parameter (col. 6, lines 7-26) and, on the basis of information in the display device, confirm said value (col. 5, lines 10-33).

The argumentation applies mutatis mutandis to the method claim 15.

2. The subject matter of dependent **claims 2-4, 11-14 and 16-19** is unable to lend novelty to the independent claims (Article 33(2) PCT) in view of D1. Further, **claims 5-10** cannot lend inventive step to the independent claim they refer to in view of D1 and knowledge of the skilled person. It is particularly noted that D1 also discloses an RF link for data transfer. The only difference is that this interface is not used for parameter programming such as frequency changing. However, this is a common procedure well known in the art of RF transmission technology (see for example D2, col. 1, line 8 - col. 2, line 5) which the skilled person must be aware of when constructing an RF transmission system as described in this application.
3. At the moment it cannot be seen which part of the application may be the basis of an allowable claim, since the closest prior art D1 discloses a system that solves the same problem and shows the same or corresponding features as given in this application. Thus, a technical contribution of this application over the prior art cannot be recognized.

III Re Item VIII

The last line of claim 1 "confirm that value" is not clear, because it is not clear who confirms the value: The "manually operated control device" - as could be concluded from the structure of the sentence - cannot confirm a value. Furthermore, this interpretation does not appear to be covered by the application as originally filed (Article 41(2) PCT). This leaves the interpretation that such a decision needs to be taken by an operator, which is contrary to the meaning of the sentence.

IAP15 Rec'd PCT/PTO 06 JAN 2006

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DESCRIPTION**«SYSTEM AND METHOD FOR THE DIMENSION CHECKING OF MECHANICAL PIECES»**

5

Technical Field

The invention relates to a system for checking the position and/or the dimensions of mechanical pieces, including a 10 checking probe with detecting devices, power supply devices, a logic unit, memory devices adapted for storing the value of at least one operation parameter of the checking probe, and a remote transceiver unit for the wireless transmission and reception of signals, a base 15 transceiver unit for the wireless transmission and reception of signals to and from the remote transceiver unit, a display device adapted for displaying, on the basis of signals received from the remote transceiver unit, information regarding the at least one parameter and an 20 associated value, and a manually-operated control device, connected to the base transceiver unit and adapted for generating, upon an operator's manual control, control signals and for transmitting the control signals by means of the base transceiver unit, the logic unit of the 25 checking probe being adapted for selecting the value of the at least one operation parameter in response to controls received by means of the remote transceiver unit and to provide signals indicative of the at least one parameter and of the associated value.

30 The invention also relates to a method for selecting the value of at least one operation parameter in a system for checking the position and/or the dimensions of mechanical pieces including a checking probe with a logic unit, memory devices, and a remote transceiver unit for the wireless 35 transmission and reception of signals, a base transceiver unit for the wireless transmission and reception of signals

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to and from the remote transceiver unit, a display device, and a manually-operated control device connected with said base transceiver unit, the method including the following steps: generation in the logic unit and transmission to the 5 display device of signals indicative of the at least one operation parameter and of an associated value, display in the display device, on the basis of the indicative signals, of information regarding the at least one operation parameter and associated value, and generation, in the 10 manually-operated control device, and transmission from the base unit to the remote transceiver unit of control signals controlling the logic unit.

Background Art

15

There are known checking systems and methods, for example in numerical control machine tools, for determining the position and/or the dimensions of machined workpieces by means of a contact detecting probe mounted in the machine 20 that, in the course of a checking cycle, displaces with respect to the workpiece, touches the surfaces to be checked and responds to contact by wirelessly transmitting

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automatically switches off. In a similar case, the "dip-switch" located on the probe need not be provided and the time parameter can be programmed and stored in the probe in a "self-learning" phase. The "self-learning" phase includes
5 the manually-operated activation of the probe in a specific way (for example by keeping the stylus deflected for a specified amount of time, or by mounting the battery with inverted polarity or in other ways that enable to differentiate the self-learning mode from the normal
10 working mode), the subsequent de-activation, implemented in an analogous or reverse way or by a remote control transmitted from the base station, subsequently to a time interval either corresponding to the time that it is desirable to set as the switching off time, or in a known
15 relationship (for example a multiple or a submultiple) with respect to said time, and the storing in the probe of the time interval, prior to suitable rounding off. This simple programming method is difficult or impossible to implement when it is necessary to set the values of more than one
20 parameter or when such values are of other nature than a time interval.

European patent application No. EP-A-0872787 refers to a programmable probe system with a probe and an interface. The probe includes a microprocessor and has some functions,
25 such as the frequency of a radio transmission circuit and on/off switching features, that are programmable. The operator can program a microprocessor in the interface with a set of program instructions to be passed to the microprocessor of the probe by means of an infra-red
30 transmission system. Probe and interface must be brought close to one another for the transmission of the program instructions.

The probe system according to the European patent application requires rather complex processing devices in
35 the probe, such as a microprocessor, and a dedicated link for the transmission of signals with complex information such as program instructions for the microprocessor.

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Disclosure of the Invention

Object of the present invention is to provide a system in
5 which the typical values of the operation parameters
characteristic of each probe can be modified in a simple,
reliable and wireless controlled way, without burdening the
system with special circuits.

A further object of the invention is to provide a method
10 applicable to the system for modifying, by means of a
wireless control, the values of the operation parameters,
that is equally simple and reliable.
These and other objects are achieved by a system according
to claim 1 and a method according to claim 15.

15

Brief Description of the Drawings

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CLAIMS:

1. A system for checking the position and/or the dimensions of mechanical pieces, including
 - 5 • a checking probe (4) with
 - detecting devices (13),
 - power supply devices (12),
 - a logic unit (36),
 - memory devices (37,38) adapted for storing the value of at least one operation parameter of the checking probe (4), and
 - a remote transceiver unit (8) for the wireless transmission and reception of signals,
 - 10 • a base transceiver unit (10) for the wireless transmission and reception of signals to and from said remote transceiver unit (8),
 - 15 • a display device (22) adapted for displaying, on the basis of signals received from the remote transceiver unit (8), information regarding said at least one parameter and an associated value, and
 - 20 • a manually-operated control device (11), connected to the base transceiver unit (10) and adapted for generating, upon an operator's manual control, control signals and for transmitting said control signals by means of the base transceiver unit (10),
 - 25 said logic unit (36) of the checking probe (4) being adapted for selecting the value of said at least one operation parameter in response to controls (C1,C2) received by means of the remote transceiver unit (8) and to provide signals indicative of said at least one parameter and of the associated value,
 - 30 characterized in that the logic unit (36) is adapted to provide, in response to the received controls (C1,C2), signals indicative of a current selectable value out of two or more selectable values, the display device (22) displaying said current selectable value of said at least one parameter,

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said control signals generated and transmitted by the manually operated control device (11) being adapted to control the logic unit (36) of the checking probe to update the value of said at least one operation parameter and, on 5 the basis of information in the display device (22), confirm said value.

2. The system according to claim 1, wherein said display device (22) is connected to the base transceiver unit (10),
10 said indicative signals being wirelessly transmitted from the remote unit (8) to the base transceiver unit (10).

3. The system according to claim 2, wherein the manually-operated control device (11) includes said display device 15 (22).

4. The system according to one of the preceding claims, including an interface unit (11), connected to said base transceiver unit (10), that includes said manually-operated 20 control device (11).

5. The system according to claim 4, wherein said remote unit (8) and said base transceiver unit (10) define a single wireless two-way communication link (14).
25

6. The system according to claim 5, wherein the remote transceiver unit (8) is adapted for transmitting by means of said single wireless two-way communication link (14) detection signals generated in the probe (4) by the 30 detecting devices (13).

7. The system according to claim 5 or claim 6, wherein the base transceiver unit (10) is adapted for transmitting by means of said single wireless two-way communication link 35 (14) signals for activating the probe (4) on the basis of signals generated in the interface unit (11).

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8. The system according to one of the preceding claims, wherein said remote unit (8) and said base transceiver unit (10) are of the radio-frequency type.

5 9. The system according to claim 8, wherein each of said base unit (10) and said remote transceiver unit (8) includes an antenna (30).

10 10. The system according to claim 8 or claim 9, wherein said at least one operation parameter of the checking probe (4) is the transmission frequency of the remote transceiver unit (8).

15 11. The system according to one of the preceding claims, wherein said memory devices include a temporary register (37) and a non-volatile memory (38).

20 12. The system according to one of the preceding claims, wherein said manually-operated control device (11) includes at least one key (20,21) and is adapted for generating said control signals in response to manual activation of said at least one key by the operator.

25 13. The system according to one of the preceding claims, wherein said manually-operated control device (11) includes two keys (20,21) and is adapted for generating said control signals in response to manual activation of said two keys (20,21) by the operator.

30 14. The system according to one of the preceding claims, for the checking of mechanical pieces in a machine tool (2), wherein the checking probe is a contact detecting probe (4) and the detecting devices include a microswitch (13).

35 15. A method for selecting the value of at least one operation parameter in a system for checking the position

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and/or the dimensions of mechanical pieces including a checking probe (4) with a logic unit (36), memory devices (37,38), and a remote transceiver unit (8) for the wireless transmission and reception of signals, a base transceiver unit (10) for the wireless transmission and reception of signals to and from said remote transceiver unit (8), a display device (22), and a manually-operated control device (11) connected to said base transceiver unit (10), the method including the following steps

- generation in the logic unit (36), and transmission (46) to the display device (22) of signals indicative of said at least one operation parameter and of an associated value,
- display (48) in the display device (22), on the basis of said indicative signals, of information regarding said at least one operation parameter and associated value, and
- generation (52,56), in the manually-operated control device (11), and transmission from the base unit (10) to the remote transceiver unit (8) of control signals controlling the logic unit (36),
the method being characterized in that said signals generated in the logic unit (36) and transmitted to the display device (22) are indicative of a current selectable value of said at least one operation parameter,
said control signals being generated in response to a control manually provided by an operator on the basis of information displayed on the display device (22), and corresponding to an updating control (C1) or a confirmation control (C2) of the current selectable value, said control signals controlling the logic unit (36) to update (54) or confirm (58,62) the value of said at least one operation parameter.

16. The method according to claim 15, in a system in which said display device (22) is connected to the base

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transceiver unit (10), wherein said transmission (46) of the indicative signals occurs wirelessly, from the remote unit (8) to the base transceiver unit (10).

5 17. The method according to claim 15 or claim 16, for selecting the value of two or more operation parameters of a system in which said memory devices (37,38) include a temporary register (37), the method including the storing in said temporary register (37) of the current selectable 10 value of each of said two or more operation parameters, as a consequence of the generation (56), in the manually-operated control device (11), of control signals corresponding to the confirmation controls (C2).

15 18. The method according to claim 17, in a system in which said memory devices (37,38) further include a non volatile memory (38), the method including the following further steps

- generation (72), in the manually-operated control device 20 (11) in response to a control manually provided by an operator, of control signals corresponding to confirmation controls (C2) of the selections made, and transmission of said control signals from the base unit (10) to the remote transceiver unit (8), and
- 25 - storage (76) in the non-volatile memory (38) of the values selected and stored in said temporary register (37).

19. The method according to claim 18, in a system in which 30 said remote unit (8) and said base transceiver unit (10) are of the radio-frequency type, where one of said two or more operation parameters of the system is the transmission and reception frequency of the remote transceiver unit (8).